Ocean Systems Inc.

Integrated Marine Operations
Decision Support Services

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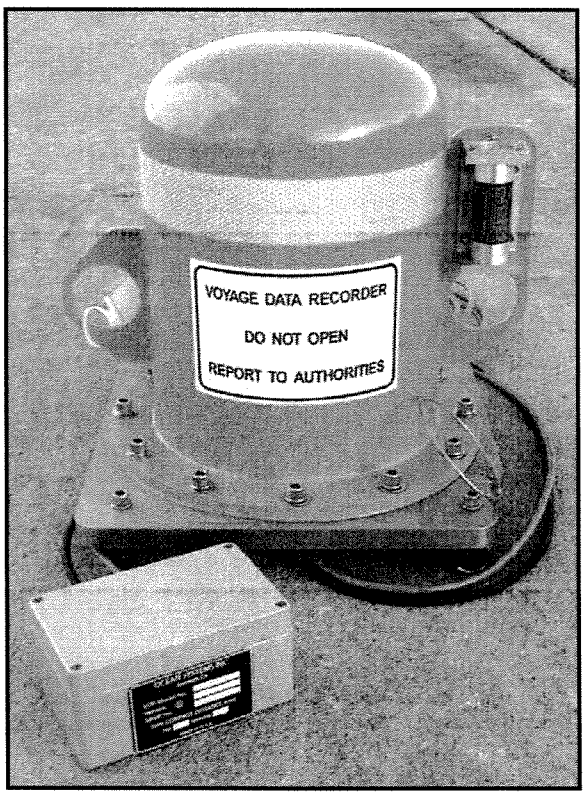
TEL 510-337-0812 FAX 510-337-0120

OEM PROTECTED DATA CAPSULE (PDC)

for Shipboard Voyage Data Recorders (VDR)

OSI Part Number: 08SA0001



Product Features

- ✓ Robust purpose-built design for shipboard application
- ✓ Fast download without stopping VDR recording
- ✓ Minimal engineering effort to interface with any VDR systems
- ✓ Patent pending design for quick and easy capsule retrieval
- ✓ Ready for remote diagnostic and quick annual inspection
- ✓ Type-approved under IEC61996 and 60945 by Det Norske Veritas (DnV)
- ✓ Available in sizes 1.5 - 6.0 Gigabytes of solid state memory

Product Description

The OSI Protected Data Capsule (PDC) is designed and manufactured for makers of shipboard VDR systems requiring Type-Approved protected data capsules so that they do not have to spend time and resources to develop their own. OSI has invested substantial R&D efforts in this application-specific design, which has passed all relevant tests specified in IEC61996 and IEC60945, and obtained its type-approval certificate from Det Norke Veritas (DnV).

The PDC houses a Solid State Memory as the final recording medium for VDR. The memory module is protected from shock, penetration, high temperature fire, long period bake and deep-sea immersion. Mounted on the ship's weather deck, it can continuously operate in cold, hot, and high humidity environments most likely encountered at sea.

Fluorescent orange in color and with a SOLAS approved reflective label, the PDC assembly measures 41W x 36D x 41H cm. The exposed deck-mounted PDC assembly comprises two parts: the Capsule and the Mounting Base. The stainless steel Mounting Base is permanently fastened to ship deck. The Capsule is easily separated from the Base by pulling a single release cable, and then recovered by a diver or underwater Remotely Operated Vehicle using the large grab handles. Less its mounting base, it weighs 34 kg in air. An acoustic beacon is included to aid locating the Capsule underwater.

The PDC is powered by a 24 VDC power source and consumes less than 10 watts. The interface to the PDC for saving and retrieving the recorded data is via a fast 10/100 Base-T Ethernet connection using up to 60m of shielded standard CAT5 and power cables. Both cables connect below-deck to a Cable Junction Box (CJB), which contains a line filter and a replaceable fuse. Two 5m (10m optional) shielded cables pass signal and power to the above deck PDC through a pair of wet-pluggable underwater connectors on the bottom of the Capsule.

Once it is powered up, the PDC appears to the VDR as a shared network drive with password-protected read/write/delete privileges, making it extremely easy to interface with VDR software written for the Windows NT or 2000 Operating Systems using standard NETBEUI protocol. For Unix-based system, communicating with the PDC is via its built-in FTP Server using standard TCP/IP protocol.

The Solid State Memory has a data integrity period of 10 years. The built-in Reed-Solomon error detection and on-the-fly correction (ECC) circuitry ensures extremely low bit error rate at <1 in 10^{14}, well below the required 1 in 10^{8}. Available size of the Solid State Memory drive ranges from 1.5 to 6.0 Gbytes of contiguous space for storing data, audio and video files without the restrictive pre-determined partitions or file naming conventions. The recorded data can be downloaded selectively or all together in minutes rather than hours while the VDR continues its recording functions.

For more information, please contact:

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WWW: http://www.ocean-systems.com e-mail: osi@ocean-systems.com

Specifications

Certification:
Fully tested and compliant to IEC 61996 and IEC60945 specification
Type-Approved by Det Norske Veritas (DnV) TAC number: A-8372

Environmental:

Operating:	-25 to 75 degrees C
Survival:	50 g shock, 3 times in each axis
	250 kg weight drop from 3m height
	10 hr @ 260 degrees C and 1 hr fire @ 1100 degrees C
	6 km depth seawater for 24 hr and 3 m depth seawater for 30 days

Electrical:

Power requirement:	24 VDC 10 W nominal
Ethernet data cable:	Shielded CAT5 up to 60 m (200 ft)
Power cable:	Shielded pair 16-20 AWG depending on distance to VDR

Solid State Memory:

Size:	1.5-6.0 Gigabytes for 12-96 hours of recording
Reliability:	Bit error rate <1 in 10^{14}, 14.6 years MTBF
	10 year data retention period after power off

Underwater Acoustic Beacon: SAE 8045 compliant, 5 year battery life.

Physical:

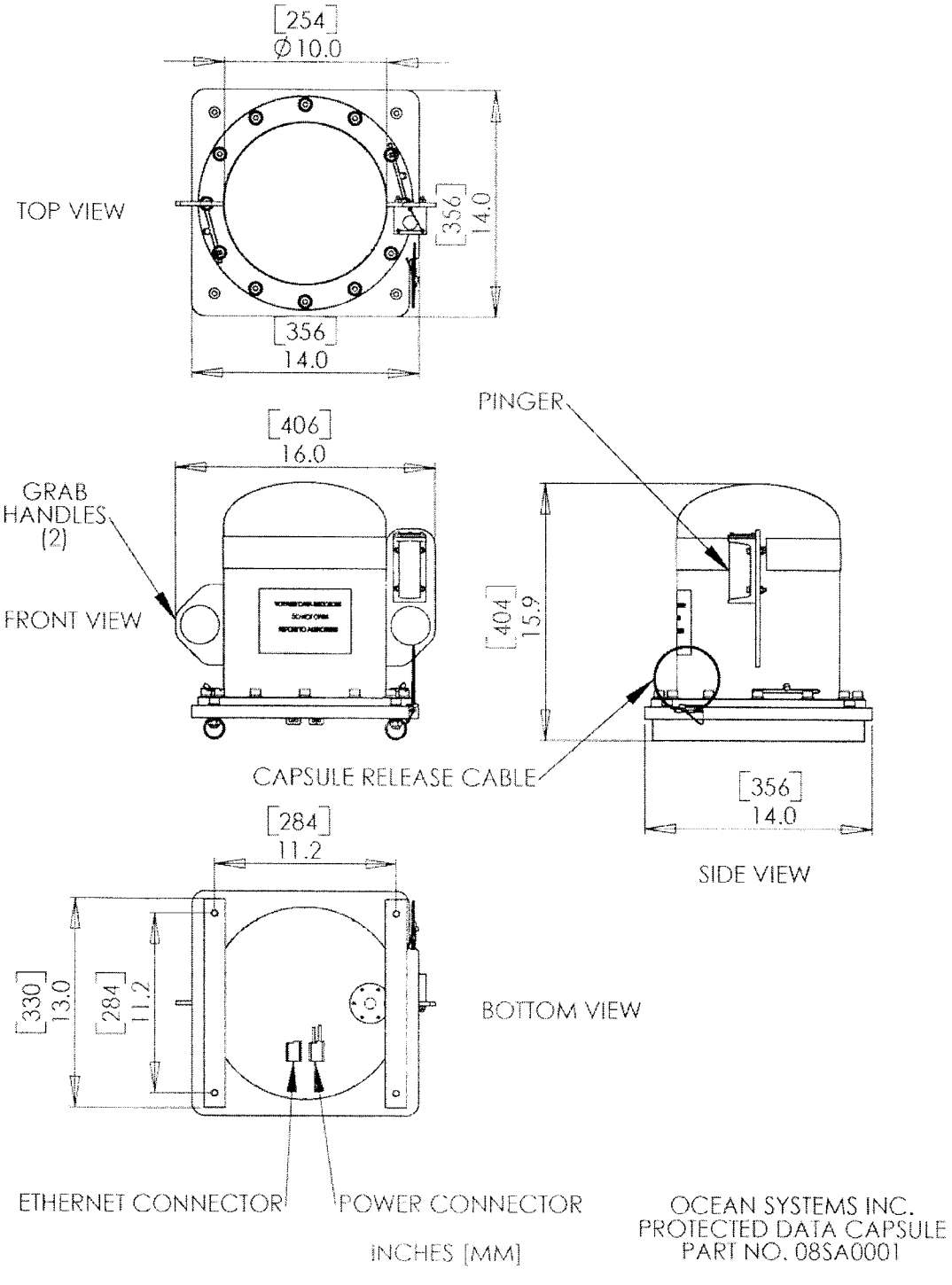
	Protected Data Capsule	Cable Junction Box
Height:	404 mm (15.9 in) incl. Std. mount	81 mm (3.19 in)
Width:	406 mm (16.0 in) incl. Std. mount	100 mm (3.94 in)
Length:	356 mm (14.0 in) incl. Std. mount	160 mm (6.30 in)

Weight:

Protected Data Capsule	34.4 kg (75.7 lb)
PDC Std. Mounting Base	7.9 kg (17.4 lb)
Connector Junction Box	1.2 kg (2.6 lb)

Installation notes:

1) Max. distance between Junction Box and Capsule 5m standard, 10m optional
2) Max. distance between Junction Box and VDR 60m standard
3) Optional adapter brackets available for Smith and L3 capsule mounting patterns.


[254]
Ø10.0
TOP VIEW
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14.0
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16.0
GRAB
HANDLES
(2)
FRONT VIEW
PINGER
[404]
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CAPSULE RELEASE CABLE
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14.0
SIDE VIEW
[284]
11.2
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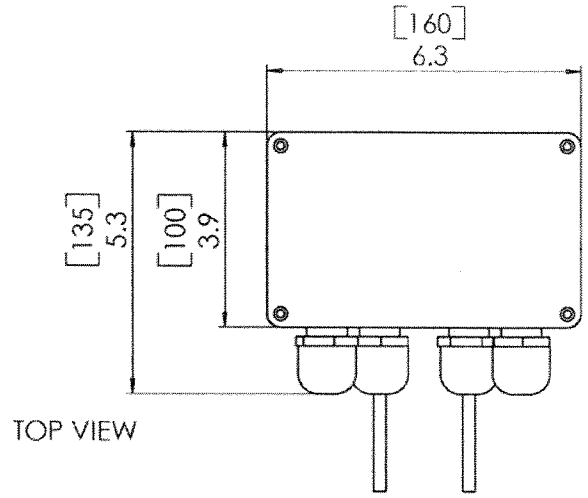
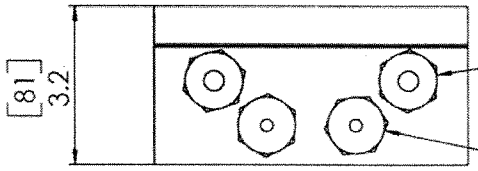
13.0
[284]
11.2
BOTTOM VIEW
ETHERNET CONNECTOR
POWER CONNECTOR
INCHES [MM]
OCEAN SYSTEMS INC.
PROTECTED DATA CAPSULE
PART NO. 08SA0001



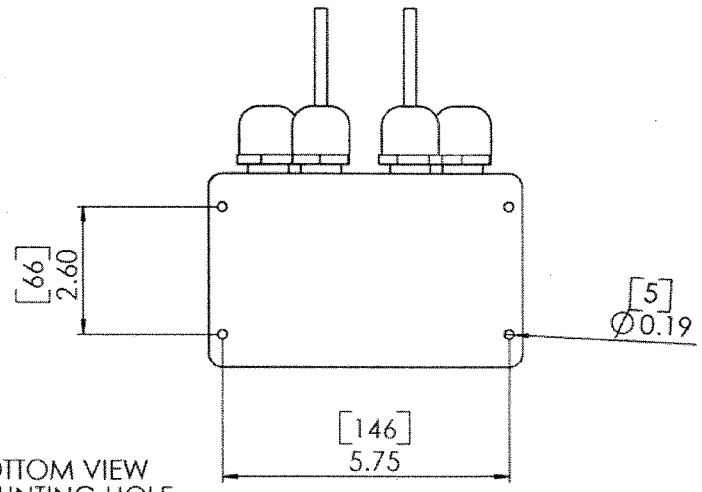
TOP VIEW



USER CABLES TO VDR
(UP TO 60M STANDARD)

CABLES (INCLUDED) TO
PROTECTED DATA CAPSULE
(5M STANDARD, 10M OPTIONAL)

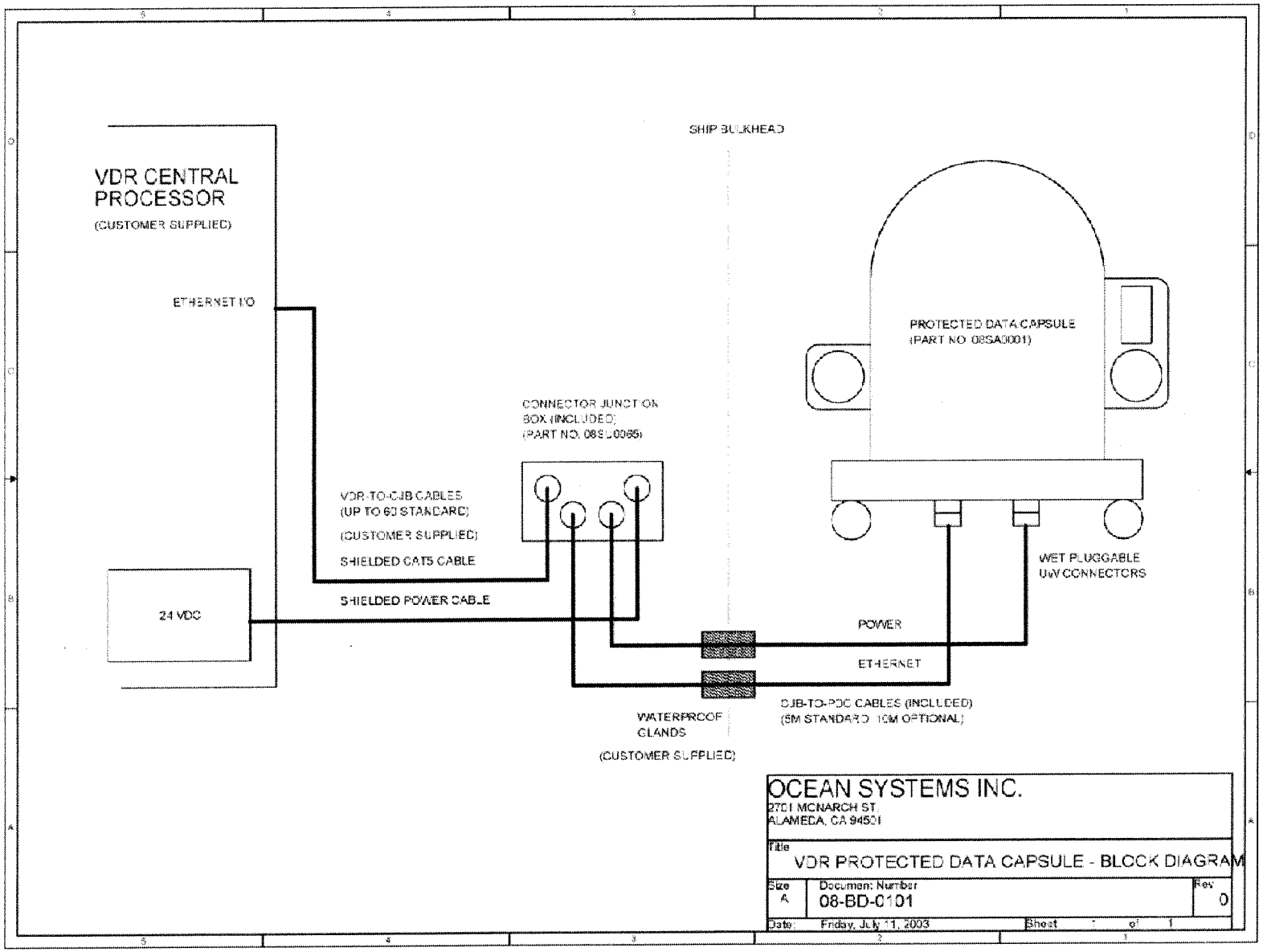
FRONT VIEW



BOTTOM VIEW
(MOUNTING HOLE
DETAIL)

INCHES [MM]

OCEAN SYSTEMS INC.
CABLE JUNCTION BOX
PT. NO. 08SU0065


SHIP BULKHEAD
VDR CENTRAL PROCESSOR
(CUSTOMER SUPPLIED)
ETHERNET I/O
PROTECTED DATA CAPSULE
(PART NO. 08SA0001)
CONNECTOR JUNCTION BOX (INCLUDED)
(PART NO. 08SJ0085)
VDR-TO-CJB CABLES
(UP TO 60 STANDARD)
(CUSTOMER SUPPLIED)
SHIELDED CAT5 CABLE
SHIELDED POWER CABLE
24 VDC
WET PLUGGABLE UW CONNECTORS
POWER
ETHERNET
CJB-TO-PDC CABLES (INCLUDED)
(5M STANDARD 10M OPTIONAL)
WATERPROOF GLANDS
(CUSTOMER SUPPLIED)
OCEAN SYSTEMS INC.
2701 MCNARCH ST.
ALAMEDA, CA 94501
Title
VDR PROTECTED DATA CAPSULE - BLOCK DIAGRAM
Size
A
Document Number
08-BD-0101
Rev
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Date: Friday, July 11, 2003
Sheet 1 of 1